

**UNITED STATES DEPARTMENT OF COMMERCE****Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/296,928 04/22/99 CERNI

T 7009/018CP

EXAMINER

024283 MM92/0207  
DUFT, GRAZIANO & FOREST, PC  
PO BOX 270930  
LOUISVILLE CO 80027

PAPER NUMBER

PAPER NUMBER

DATE MAILED:

02/07/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

<b>Office Action Summary</b>	Application No. <b>09/296,928</b>	Applicant(s) <b>Cerni et al.</b>
	Examiner <b>Hoa Q. Pham</b>	Group Art Unit <b>2877</b>

Responsive to communication(s) filed on Jan 2, 2001

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

#### Disposition of Claims

Claim(s) 1-33 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

Claim(s) \_\_\_\_\_ is/are allowed.

Claim(s) 1-33 is/are rejected.

Claim(s) \_\_\_\_\_ is/are objected to.

Claims \_\_\_\_\_ are subject to restriction or election requirement.

#### Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

The proposed drawing correction, filed on \_\_\_\_\_ is  approved  disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All  Some\*  None of the CERTIFIED copies of the priority documents have been received.

received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

#### Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2877

## **DETAILED ACTION**

### ***Terminal Disclaimer***

1. The terminal disclaimer filed on ½/2000 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Gouesbet (U.S Pat. 4,373,807).

Gouesbet (of record) does not explicitly teach that light is transmitted through a flow of a slurry as used in a chemical mechanical planarization process. However, **Gouesbet teaches that the invention can be used for determining the diameter of the particles based on in situ measurement in furnaces, in flames, in combustion engines, at the outlet factory chimneys, and in all sorts of other applications** (column 5 lines 46-51). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the basic device of

Art Unit: 2877

Gouesbet to detect the change of the slurry as used in a chemical mechanical planarization process as suggested by Gouesbet because the device would function in the same manner.

4. Claims 26, 29, 30 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogino (U.S Pat. 5,422,712).

Ogino (of record) does not explicitly teach that light is transmitted through a flow of a slurry as used in a chemical mechanical planarization process. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the basic device of Ogino to detect the change of the slurry as used in a chemical mechanical planarization process because it does not matter what types of fluid to be inspected, the device would function in the same manner.

5. Claims 5-16, 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gouesbet in view of Ferri (XP-000685215), Loos (4,338,030), Lundqvist et al (4,318,180), Niwa (5,379,113) and Anatoli et al (XP-000685510).

Regarding claims 5-7; the step of determining a slope of a logarithmic of transmission as a function of the wavelengths is well known in the art, for example as stated by applicant in page 28 lines 15-16; thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to include such step into the invention of Gouesbet for the purpose of determining the particle size distribution.

Art Unit: 2877

Regarding claims 8-9 and 15; Ferri et al (of record) discloses a commercial spectrophotometer for particle sizing in which the spectrophotometer is operated between 0.3 and 1.1um (page 885, right hand column, lines 27-35). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the wavelength range between 0.3 and 1.1 um taught by Ferri et al into the invention of Gouesbet. The rationale for this modification would have arisen from the fact that using such range of wavelengths would detect the diameter of the particles within the range of 0.6 and 2.8 um.

Regarding claims 10-14; it would have been obvious matter of design choice to modify the Gouesbet reference by having the diameter of the diameter of the radiation between 100-200 microns, since the applicant has not disclosed that having such diameter would solve any specific problem or for any particular purpose.

Regarding claims 16 and 18; Loos, from the same field of endeavor, teaches the use of filters or grating for selecting different wavelengths (column 12 lines 12-21 and column 13 lines 8-12); thus it would have been obvious to one have ordinary skill in the art at the time the invention was made to replace the first, second laser beams and filter of Gouesbet by a grating or filters of Loos for the purpose of separating different wavelengths because they would function in the same manner.

Regarding claim 19; Lundqvist et al teaches that a warning signal is provided when the fractional proportions measured are within the limit values (column 1 line 65 through column 2 line 2). Thus, it would have been obvious to one having ordinary skill in the art to include in

Art Unit: 2877

Gouesbet a warning signal as taught by Lundqvist et al, thus an accuracy of the measurement is obtained.

Regarding claims 20-22; Niwa teaches the comparison between the reference transmission in memory and a measured transmission and the particle size information is obtained on the basis of the comparison (figures 1, 2 and 5). Thus for the purpose of determining the particle size distribution, it would have been obvious to one having ordinary skill in the art to include in Gouesbet a comparison step as taught by Niwa.

Regarding claims 23-25; Anatoli et al (of record) teaches the use of Mie theory (page 1363, left-hand column lines 19-23) for determining the particle size; it would have been obvious to replace the method of Gouesbet by the method of Anatoli for the same purpose of determining the particle size distribution. Such a substitution for each other is generally recognized as being within the level of ordinary skill in the art.

6. Claims 27-28 and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogino in view of Loos and Niwa.

Regarding claims 27 and 28; Loos, from the same field of endeavor, teaches the use of filters or grating for selecting different wavelengths (column 12 lines 12-21 and column 13 lines 8-12); thus it would have been obvious to one have ordinary skill in the art at the time the invention was made to replace the first, second laser beams of Ogino by a grating or filters of Loos for the purpose of separating different wavelengths because they would function in the same manner.

Art Unit: 2877

Regarding claims 31-32; Niwa teaches the comparison between the reference transmission in memory and a measured transmission and the particle size information is obtained on the basis of the comparison (figures 1, 2 and 5). Thus for the purpose of determining the particle size distribution, it would have been obvious to one having ordinary skill in the art to include in Ogino a comparison step as taught by Niwa.

***Response to Arguments***

7. Applicant's arguments filed ½/2001 have been fully considered but they are not persuasive.

A. Applicant's amendment to clarify claims 1 and 26 in which the limitation "**the slurry as used in a chemical mechanical planaziration process**" requires a new ground of the rejection.

B. Applicant's remarks, pages 2 and 3, argue that Gouesbet and Ogino do not suggest of transmitting light through slurry. However, figures 2 and 4 of Gouesbet teaches that light transmitted through the fluid medium is detected by detectors (PM1 and PM2), and column 2 lines 38-47 of Ogino teaches transmitted light passes through the sample liquid. Thus, it would have been obvious to one having ordinary skill in the art to use the basic device of Gouesbet or Ogino to detect slurry used in a chemical mechanical planarization process as mentioned above.

C. Applicant's remarks, page 4, argues that the slurry is **an optically dense medium** not a transparent medium. However, this limitation is not claimed in the claims. The slurry could be

Art Unit: 2877

under diluted slurry medium. Claims must be examined on the basis of what they say, absent limitations may not be assumed to be present.

D. Applicant's remarks, page 5, argues that Gouesbet is a single wavelength device, therefore, no reason to combine with other references. The argument is not deemed to be persuasive because Gouesbet teaches the two wavelengths (first color and second color) are passed through the sample and detected (claim 12 and column 10 lines 25). In addition, claim 1 of the present invention recited that "**the radiation having one or more wavelength**". Thus, a reference teaches either one or more reference would meet the claimed invention. Thus, when the references are in combination, the claimed invention is obviously suggested.

E. Regarding to the Declaration filed on 1/201; paragraphs 6-8, Applicant argues over the "optically dense slurry" defined in the specification, however, this limitation is not recited in the claims. The claims only mentioned slurry, it could be other types of slurry with different particle densities and does not have to be optically dense slurry.

F. Regarding paragraph 12, Gouesbet teaches the use of one or more wavelengths as mentioned above. In addition, the transmitted light is taught by Ogino and Gouesbet above. Applicant is also noted that the light transmittance in the forward-scattering angle range can be called "transmitting light" (see Nefedov et al).

Art Unit: 2877

G. Regarding paragraph 18-19 of the declaration, applicant argues on the diluted slurry or undiluted slurry; however, “undiluted slurry” is not in the claims. Thus, the argument is not deemed to be persuasive.

In view of the foregoing, it is believed that the rejection of claims 1-33 under 35 U.S.C 103 is proper.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2877

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Hoa Pham whose telephone number is (703) 308-4808. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Pham/hp

February 02, 2001



Hoa Q. Pham  
Primary Examiner